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PTO/SB/21 (02-04)

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**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

Application Number 10/628,525

Filing Date July 28, 2003

First Named Inventor Peter L. Keeling

Art Unit 1644

Examiner Name Not yet assigned

Total Number of Pages in This Submission

467

Attorney Docket Number 15056-4

**ENCLOSURES (Check all that apply)**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Fee Transmittal Form                                | <input type="checkbox"/> Drawing(s)                                       | <input type="checkbox"/> After Allowance communication to Technology Center (TC)        |
| <input type="checkbox"/> Fee Attached  | <input type="checkbox"/> Licensing-related Papers                         | <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences     |
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| <input type="checkbox"/> Certified Copy of Priority Document(s)              | <input type="checkbox"/> CD, Number of CD(s) _____                        | 60 references   |
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| <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 |   |   |

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm or Individual name Patricia A. McDaniels, Reg. No. 33,194

Signature *Patricia A. McDaniels*

Date June 7, 2004

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.: 10/628,525 Confirmation No.: 4291  
Applicant: Keeling et al.  
Filed: 07/28/2003  
TC/A.U.: 1644  
Examiner: Not yet assigned  
Docket No.: 15056-4  
Customer No.: 029137

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97, and 1.98, Applicants submit herewith the attached Form PTO-1449 and copies of the articles cited therein. No representation is made that a search has been done, or that no additional references may be cited against the present claims.

This Information Disclosure Statement is submitted prior to the receipt of a first Office Action on the merits, and no fee is believed to be due. However, if any fee is due with regard to this submission, authorization is hereby given to charge such fee, or to credit any overpayment, to Deposit Account No. 02-1197.

Respectfully submitted,

Patricia A. McDaniels  
Reg. No. 33,194  
Attorney for Applicant

Customer No. 029137  
Dated: June 7, 2004  
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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

*(Use as many sheets as necessary)*

**Complete if Known**

Application Number	10/628,525
Filing Date	July 28, 2003
First Named Inventor	Peter L. Keeling
Art Unit	1644
Examiner Name	Not yet assigned
Attorney Docket Number	15056-4

Sheet	1	of	7
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## U. S. PATENT DOCUMENTS

[illegible]

## FOREIGN PATENT DOCUMENTS

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Examiner Signature		Date Considered	
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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		Application Number	10/628,525
		Filing Date	July 28, 2003
		First Named Inventor	Peer L. Keeling
		Art Unit	6144
Examiner Name	Not yet assigned		
Sheet 2	of 7	Attorney Docket Number	15056-4

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	J	BABA, T. et al., "Identification, cDNA Cloning, and Gene Expression of Soluble Starch Synthase in Rice ( <i>Oryza sativa</i> L.) Immature Seeds" (1993), Plant Physiol. 103:565-573	
	K	BABA, T. et al "Sequence Conservation of the Catalytic Regions of Amylolytic Enzymes in Maize Branching Enzyme-I" (1991) Biochem. Biophys. Res. Comm. 181(1):87-94	
	L	BHATTACHARYYA, M. et al. "The Importance of Starch Biosynthesis in the Wrinkled Seed Shape Character of Peas Studied by Mendel" (1993) Plant Mol. Biol. 22:525-531	
	M	BOYER, C. et al. "Multiple Forms of (1 - 4)-a-D-GLUCAN-6-Glycosyl Transferase from Development Zea Mays L. Kernels" (1978) Carbohydrate Research 61:321-334	
	N	BROEKHUIJSEN, M. et al. "Secretion of heterologous proteins by <i>Aspergillus niger</i> : Production of active..." (1993) Journal of Biotechnology 31:135-145	
	O	BROWNER, M. et al. "Human muscle glycogen synthase cDNA sequence: A negatively charged protein with an asymmetric char..." (3/1989) Proc. Natl. Acad. Sci. USA 86:1443-1447	
	P	CHEN, L et al. "Improved Adsorption to Starch of a B-Galactosidase Fusion Protein Containing the Starch-Binding Domain from <i>Aspergillus</i> ..." (1991) Biotechnol. Prog. 7:225-229	
	Q	DANG, P. et al. "Maize Leaf and Kernel Starch Synthases and Starch Branching Enzymes" (1988) Phytochemistry 27(5):1255-1259	
	S	DENYER, K. et al. "Identification of multiple isoforms of soluble and granule-bound starch synthase in development wheat endosperm" (1995) Plant 196:256-265	
	T	DENYER, K. et al. "The purification and characterisation of the two forms of soluble starch synthase from developing pea embryos" (1992) Planta 186:609-617	

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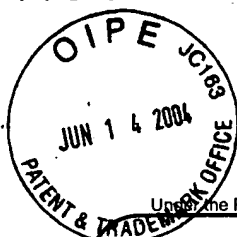
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		Application Number	10/628,525		
		Filing Date	July 28, 2003		
		First Named Inventor	Peer L. Keeling		
		Art Unit	6144		
		Examiner Name	Not yet assigned		
Sheet	3	of	7	Attorney Docket Number	15056-4

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	U	DENYER, K. et al. "Soluble isoforms of starch synthase and starch-branching enzyme also occur within starch granules in developing..." (1993) The Plant Journal 4(1):191-198	
	V	DRY, I. et al. "Characterization of cDNAs encoding two isoforms of granule-bound starch synthase which show differential expression..." (1992) The Plant Journal 2(2):193-202	
	W	EDWARDS, A. et al. "Evidence that a 77-Kilodalton Protein from the Starch of Pea Embryos Is an Isoform of Starch Synthase That Is Both..." (1996) Plant Physiol. 112:89-97	
	X	FRYDMAN, R. et al. "Soluble Enzymes Related to Starch Synthesis" (1964) Biochem. and Biophys. Res. Comm. 17(4):407-411	
	Y	FURUKAWA, K. et al. "Role of the Conserved Lys-X-Gly-Gly Sequence at the ADP-glucose-binding Site in..." (11/15/1993) The Journal of Biological Chemistry 268(32):23837-23842	
	Z	FURUKAWA, K. et al. "Identification of Lysine 15 at the Active Site in Escherichia coli Glycogen Synthase" (2/5/1990) The Journal of Biological Chemistry 265(4):2086-2090	
	AA	GODDIJIN, O. et al. "Plants as bioreactors" (9/1995) Trends in Biotechnology 13(9):379-387	
	AB	HOVENKAMP-HERMELINK, J. et al. "Isolation of an amylose-free starch mutant of the potato (Solanum tuberosum L.)" (1987) Theor. Appl. Genet. 75:217-221	
	AC	JENNER, C. et al. "Thermal Characteristics of Soluble Starch Synthase from Wheat Endosperm" (1995) Aust. J. Plant. Physiol. 22:703-709	
	AD	KEELING, P. et al. "Effect of Temperature on Enzymes in the Pathway of Starch Biosynthesis in Developing Wheat and Maize Grain" (1994) Aust. J. Plant. Physiol. 21:807-827	

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	AE	KEELING, P. et al. "Elevated temperature reduces starch deposition in wheat endosperm by reducing the activity of soluble starch synthase" (1993) Planta 191:342-348	
	AF	KIEL, J. et al. "Molecular cloning and nucleotide sequence of the glycogen branching enzyme gene (glgB) from Bacillus..." (1991) Mol. Gen. Genet. 230:136-144	
	AG	KIEL, J. et al. "Cloning and expression of the branching enzyme gene (glgB) from the cyanobacterium Synechococcus sp. PCC7942 in Escherichia coli" (1989) Gen. 78:9-17	
	AH	KIRIHARA, J. et al. "Isolation and sequence of a gene encoding a methionine-rich 10-kDa zein protein from maize" (1988) Gen. 71:359-370	
	AI	KOBMANN, J. et al. "Cloning and expression analysis of a potato cDNA that encodes branching enzyme: evidence for co-expression of starch..." (1991) Mol. Gen. Genet. 230:39-44	
	AJ	KUMAR, A. et al. "Biosynthesis of Bacterial Glycogen" (12/5/1986) The Journal of Biological Chemistry, 261(34):16256-16259	
	AK	KUSNADI, A. et al. "Functional starch-binding domain of Aspergillus glucoamylase I in Escherichia coli" (1993) Gene 127:193-197	
	AL	LEUNG, P. et al. "Cloning and Expression of the Escherichia coli glgC Gene from a Mutant Containing an ADPglucose..." (7/1986) J. of Bacteriology, 167(1):82-88	
	AM	MCCORMICK, M. et al. "Purification and S-Tag detection of CBD fusion proteins" (1997) in Novations 7:12-15	
	AN	MACDONALD, F. et al. "Partial Purification and Characterization of Granule-Bound Starch Synthases from Normal and Waxy Maize" (1985) Plant Physiol. 8:849-852	

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Filing Date	July 28, 2003
First Named Inventor	Peer L. Keeling
Art Unit	6144
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Sheet	5	of	7
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**NON PATENT LITERATURE DOCUMENTS**

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	AO	MACDONALD, F. et al. "Solubilization of the Starch-Granule-Bound Starch Synthase of Normal Maize Kernels" (1983) Plant Physiol. 73:175-178	
	AP	MARSHALL, J. et al. "Identification of the Major Starch Synthase in the Soluble Fraction of Potato Tubers" (7/1996) the Plant Cell 8:1121-1135	
	AQ	MATSUMOTO, A. et al. "A Kinetic Study of the Interaction between Glycogen and Neurospora crassa Branching Enzyme" (1990) J. Biochem. 107:123-126	
	AR	MONSMA, A. et al. "New pBAC transfer plasmids for baculovirus expression of CBD fusion proteins" (1997) InNovations 7:8-11	
	AS	MONSMA, A. et al. "BacVector-3000: An engineered baculovirus designed for greater protein stability" (1997) InNovations 7:16-24	
	AT	MU, C. et al. "Association of a 76 kDa polypeptide with soluble starch synthase I activity in maize (cv B73) endosperm" (1994) The Plant Journal 6(2):151-159	
	AU	MU-FORSTER, C. et al. "Physical Association of Starch Biosynthetic Enzymes with Starch Granules of Maize Endosperm" (1996) Plant Physiol. 111:821-829	
	AV	NAKAMURA, Y. et al. "Nucleotide Sequence of a cDNA Encoding Starch-Branching Enzyme, or Q-Enzyme I, from Rice Endosperm" (1992) Plant Physiol 99:1265-1266	
	AW	NAKAMURA, Y. et al. "Purification of two forms of starch branching enzyme (Q-enzyme) from developing rice endosperm" (1992) Physiologia Plantarum 84:329-335	
	AX	NOVY, R. et al. "New pET expression vectors generate fusion proteins with cellulose binding domains" (1981) inNovations 7:4-7	

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	AY	OKITA, T. et al. "Biosynthesis of Bacterial Glycogen" (7/10/1981) The Journal of Biological Chemistry 256(13):6944-6952	
	AZ	POLLOCK, C. et al. "The Citrate-Stimulated Starch Synthase of Starchy Maize Kernels: Purification and Properties" (1980) Archives of Biochemistry and Biophysics 204(2):578-58	
	BA	ROWEN, D. et al. "GLC3 and GHA1 of Saccharomyces cerevisiae Are Allelic and Encode the glycogen Branching Enzyme" (1/1992) Molecular and Cellular Biology 12(1):22-29	
	BB	SALEHUZZAMAN, S. et al. "Cloning, partial sequencing and expression of a cDNA coding for branching enzyme in cassava" (1992) Plant Molecular Biology 20:809-819	
	BC	SHIMADA, H. "Antisense regulation of the rice waxy gene expression using a PCR-amplified fragment of the rice genome reduces..." (1993) Theor. Appl. Genet. 86:665-672	
	BD	SHURE, M. et al. "Molecular Identification and Isolation of the Waxy Locus in Maize" (11/1983) Cell 35:225-233	
	BE	SMITH, A. "Major differences in isoforms of starch-branching enzyme between developing embryos of round- and wrinkled-seeded peas (Pisum sativum..." (1988) Planta 175:270-279	
	BF	SHOSEYOV, O. et al. "Cellulose binding domains - A novel fusion technology for efficient, low cost purification and immobilization of..." (8/1997) InNovations 7:1-3	
	BG	SINGH, B. et al. "Starch Branching Enzymes from Maize" (1985) Plant Physiol. 79:34-40	
	BH	SVENSSON, B. et al. "Sequence homology between putative raw-starch binding domains from different starch-degrading enzymes" (1989) Biochem. J. 264:309-311	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)		<b>Complete if Known</b>			
		Application Number	10/628,525		
		Filing Date	July 28, 2003		
		First Named Inventor	Peer L. Keeling		
		Art Unit	6144		
		Examiner Name	Not yet assigned		
Sheet	7	of	7	Attorney Docket Number	15056-4

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	BI	TAKAHASHI, T. et al. "Different Behavior towards Raw Starch of Three Forms of Glucoamylase from a Rhizopus Sp." (1985) J. Biochem. 98:663-671	
	BJ	TSAL, C. "The Function of the Waxy Locus in Starch synthesis in Maize Endosperm" (1974) Biochemical Genetics 11(2):83-96	
	BK	TYYNELA, J. et al. "An analysis of soluble starch synthase isozymes from the developing grains of normal and shx cv. Bomi Barley..." (1993) Physiologia Plantarum 89:835-841	
	BL	VALVEKENS, D. et al. "Agrobacterium tumefaciens-mediated transformation of Arabidopsis thaliana root explants by using..." (8/1988) Proc. Natl. Acad. Sci. USA 85:5536-5540	
	BM	VAN DER LEIJ, F. et al. "Complementation of the amylose-free starch mutant of potato (Solanum tuberosum.) by the gene encoding..." (1991) Theor. Appl. Genet. 82:289-295	
	BN	VISSER, R. et al. "Inhibition of the expression fo the gene for granule-bound starch synthase in potato by antisense constructs" (1991) Mol. Gen. Genet. 225:289-296	
	BO	VISSER, R. et al. "Molecular Cloning and Partial Characterization of the Gene for Granule-bound Starch Synthase from a Wildtype and an..." (1989) Plant Science 64:185-192	
	BP	VON HEIJNE, G. et al. "CHLPEP - A Database of Chloroplast Transit Peptides" (1991) Plant Molecular Biology Reporter 9(2):104-126	
	BQ	VOS-SHEPERKEUTER, G. et al. "Immunological Comparison of the Starch Branching Enzymes from Potato Tubers and Maize Kernels" (1989) Plant Physiol 90:75-84	
	BR	ZHANG, W. et al. "Primary structure of rabbit skeletal muscle glycogen synthase deduced from cDNA clones" (1989) The BASEB Journal 3:2532-2536	

Examiner Signature	Date Considered
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